Terminal Servers

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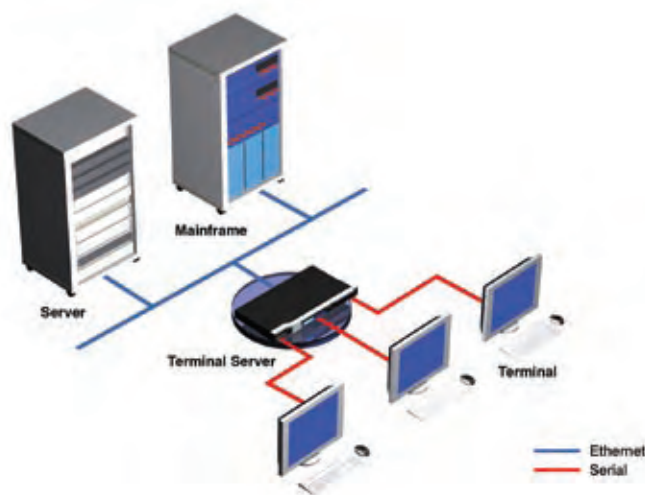**Secure Terminal Servers/Terminal Servers**

The Difference Between Device Servers, Terminal Servers, and Console Servers

The terms "terminal server," "device server," and "console server" can be confusing. They all refer to hardware that connects to RS-232 devices and transmits serial data using TCP/IP Telnet, SSH, or a vendor-specific protocol. In fact, these three server types represent the evolution of user demand for information technologies.

Terminal servers were first introduced to help engineers connect so-called "dumb terminals" to a host computer over an Ethernet connection. With terminal servers, data transmission is text based and is transmitted using Telnet, TCP/IP, SSH, or some other manufacturer-defined protocol. Terminal servers are designed to enable users to access front-end IT equipment using PPP or dial-in/dial-out, without using a modem. Terminal servers are generally found in IT environments such as data centers, airports, and banks.

Before the development of Ethernet technology, terminal servers were used to provide access to data using dial-up connections. However, as Ethernet became more common, demand for industrial applications also grew. Most machine-to-machine communication is serial-based, which is effective only over short distances. This makes it difficult to manage all equipment from a central location, which is the foundation of industrial automation. Device servers emerged as a result.

A device server is essentially a simplified terminal server. For industrial applications, serial-to-Ethernet communication does not require sophisticated functionality. Device server manufacturers typically include drivers or COM mapping functions that make things easier for engineers who are not familiar with IT concepts. With drivers installed, serial devices can be controlled over Ethernet using legacy software, without requiring knowledge of difficult TCP/IP routing techniques or socket programming. Engineers can continue relying on their knowledge of COM/TTY port programming for device control.

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As IT infrastructures quickly expanded, the "console server" or "serial console server" developed as a management tool. Corporate MIS decision-makers originally adapted terminal servers for use in central management solutions. However, with the overwhelming adoption of Ethernet, specific needs emerged for console servers. Management

security became a crucial issue, and console servers began requiring advanced authentication functions. Moreover, to cope with ever-increasing numbers of servers and routers, utilities and other solutions have developed to simplify centralized management and reduce the workload required.

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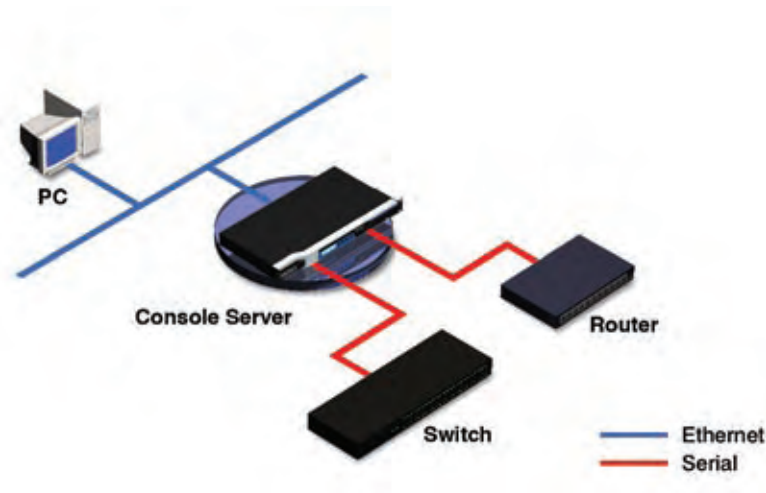
Rquirements for Terminal, Device, and Console Servers

	Terminal Server	Device Server	Console Server
RS-232 Interface	✱✱	✱	✱✱
RS-422/485 Interface	✱✱	✱	✱✱✱
4 or fewer ports	✱✱	✱	✱✱
8 or more ports	✱	✱✱	✱
DC 48V Input	✱	✱✱✱	✱
Dual Power Inputs	✱	✱✱✱	✱
OS Driver Support	✱✱	✱	✱✱✱
Central Management Utility	✱✱	✱✱	✱
Assign IP to Serial Port	✱✱	✱✱✱	✱
Data Security	✱	✱✱✱	✱
User Identification	✱✱	✱✱✱	✱
User Authorization	✱✱	✱✱✱	✱
Dial-up Service	✱	✱✱✱	✱
PPPoE	✱✱	✱✱	✱✱
Break-safe	✱✱	✱✱✱	✱

✱✱✱ Very Important
✱✱ Important
✱ Less Important

Secure Terminal Servers

: Overview

NPort 6000 device servers provide serial-to-Ethernet connectivity that is more reliable and more secure. They can connect any serial device to an Ethernet network using different operation modes such as TCP Server, TCP Client, UDP, and Pair Connection mode. For applications that require data security, such as banking, telecom, access control, or remote site management, secure modes are also available, including Secure TCP Server, Secure TCP Client, Secure Pair-Connection, and Secure Real COM mode.

Secure Data Communication with SSL Protocol

Network security is a critical issue for certain applications. Security is especially important when data is transmitted over the Internet, where it is vulnerable to interception by third parties. NPort 6000 device servers use SSL to implement secure modes for network data security, including Secure TCP Server, Secure TCP Client, Secure Pair Connection, and Secure Real COM modes. The NPort 6000 and included drivers adhere to the SSL standard and automatically negotiate the encryption key. To prevent hacker attacks, the NPort will automatically switch from DES/3DES to AES encryption.

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Secure Remote Management and Configuration with SSH and SSL

Unauthorized access is a major concern for system managers. NPort 6000 device servers help control access by supporting IP filtering and password protection. Extra protection from hackers is also provided by SSH and SSL. Secure configuration of the NPort 6000 is provided by opening the web console with a web browser that supports https (e.g., Internet Explorer), or by opening the Telnet console using a terminal emulator that supports SSH (e.g., PuTTY).

Powerful Hardware Encryption Engine

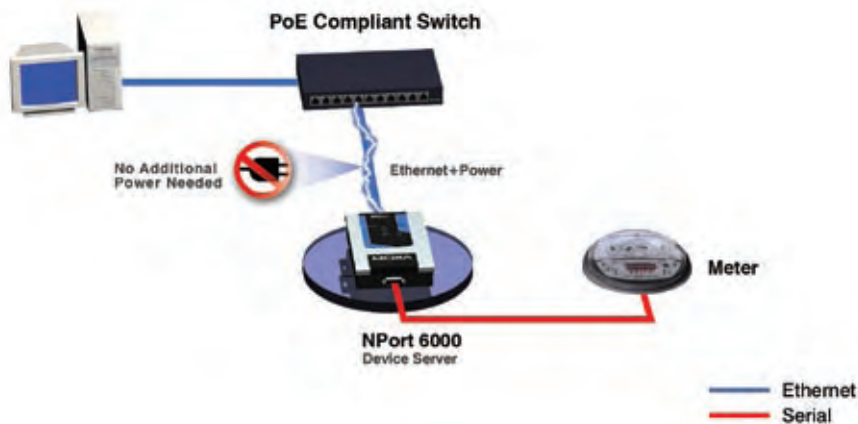**Powerful encryption engine that reduces encryption time**

A powerful hardware encryption engine that supports the complete DES/3DES/AES encryption algorithms is built into the NPort 6000. For DES and 3DES encryption, the NPort 6000 supports ECB, CBC, CFB, and OFB modes. For AES encryption, the NPort 6000 supports ECB, CBC, CFB, OFB, and CTR modes with a 128-bit, 192-bit, or 256-bit key.

Power Redundancy with 802.3af PoE (Under Development)

NPort 6000 device servers can act as a PD (Powered Device) in compliance with the 802.3af POE (Power Over Ethernet) standard. This means that the NPort 6000 does not require a power adaptor, but can operate using power supplied by a device acting as a PSE (Power Sourcing Equipment).

Support for POE can also be used to for power redundancy. When the power redundancy feature is enabled, the NPort 6000 relies on a PSE for backup power. If the main power source (i.e., the power cable or adaptor) fails, the NPort 6000 automatically continues operation without interruption using power supplied by the PSE.

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Port Buffering that Preserves Data if Ethernet Fails

For mission-critical applications, data collected from a serial device must be safeguarded if the Ethernet connection is severed. The NPort 6000 provides exceptionally reliable data transmission by saving serial data to an internal 64 KB port buffer if the Ethernet connection fails.

When the Ethernet is reconnected, data in the buffer is automatically released and sent to the appropriate destination. For the NPort 6250, 6450, and 6650, this buffer can be expanded by installing an SD card.

Any Nonstandard Baudrate Between 50 to 921.6 Kbps

Most device servers support only standard baudrates. However, some applications require special baudrates, such as 250 Kbps or 500 Kbps. With NPort 6000 device servers, users can use any baudrate between

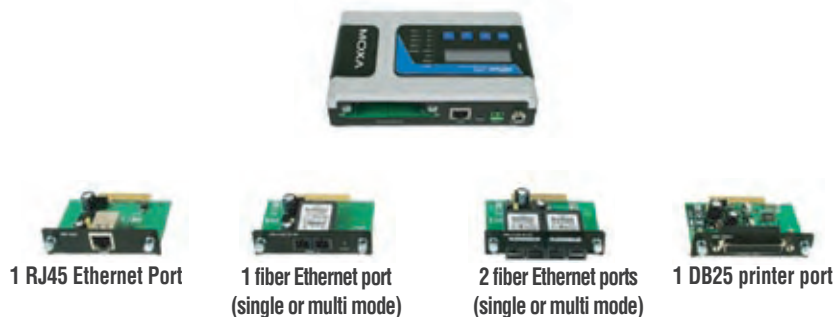50 and 921.k Kbps. The NPort 6000 works flawlessly with all devices that require special baudrates.

Ethernet Port Expansion (NPort 6450/6650 only)

Although more and more devices are now Ethernet-ready, many legacy devices only provide a serial interface. The main purpose of device servers is to connect serial devices to Ethernet, allowing engineers to integrate all devices into an Ethernet environment.

A problem can arise if both Ethernet-ready and legacy serial devices need to be connected from the same location. The NPort 6450 and 6650 can use the Ethernet expansion module to add additional Ethernet ports, effectively allowing operation as a combination Ethernet

switch/device server. With Ethernet expansion modules for the NPort 6450 and 6650, users no longer need to invest in a more expensive switch or hub to connect every device. Modules are available for different Ethernet media, including copper Ethernet, multi-mode fiber, and single-mode fiber. Ethernet expansion modules can also be used to create a cascading topology where device servers are connected to each other in a daisy chain.

Interchangeable modules for Ethernet expansion

| 1 RJ45 Ethernet Port | 1 fiber Ethernet port (single or multi mode) | 2 fiber Ethernet ports (single or multi mode) | 1 DB25 printer port |

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Ethernet Ring Topology with Fast Recovery (under development)

NPort 6000 device servers support the Turbo Ring cascade topology. In a Turbo Ring topology, if any segment of the daisy-chained ring is disconnected, the network will recover in less than 300 ms.
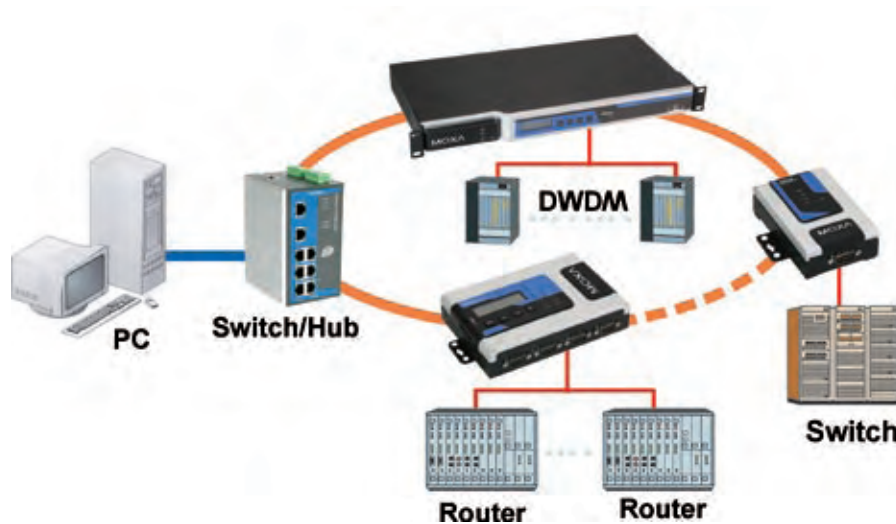
Supports ADSL Dial-up and DDNS

With serial devices connected to an NPort 6000 device server, users can use any networked computer to control the devices over an Ethernet network, intranet, or the Internet. Connections can be established using different operation modes such as Real COM/TTY, TCP Server, or TCP Client mode. The NPort 6000 also supports PPPoE for ADSL connections, and DDNS can be used to help locate NPort 6000 device servers on the network. In addition, fiber optic models are available to extend the Ethernet connection distance.

Reliable Power Input

NPort 6000 device servers have an industrial-strength power input connector to minmize the chance of accidental power disconnection.

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Secure Terminal Servers/Terminal Servers

Terminal Server Selection Guide

Model Name		NPort 6150	NPort 6250	NPort 6250-M-SC
LAN	10/100M Ethernet	1	1	---
	100M Fiber	---	---	Multi-Mode
	Connector	RJ45	RJ45	SC
	Extension Slot	---	---	---
	10/100BaseT RJ45 Module	---	---	---
	Multi Mode SC Connector Module	---	---	---
	Single Mode SC Connector Module	---	---	---
	Parallel Port Module	---	---	---
	Power Over Ethernet (IEEE802.3af)	Under development	Under development	Under development
	1.5 KV Magnetic Isolation	√	√	√
Serial Interface	RS-232/422/485	1 port, DB9 (Male)	2 port, DB9 (Male)	2 port, DB9 (Male)
	Speed	50 to 921.6 Kbps		
	Communication Parameters	Parity: None, Even, Odd, Space, Mark; Data Bits, 5, 6, 7, 8; Stop Bit(s): 1, 1.5, 2		
	Flow Control (RTC/CTS/ XON/XOFF)	√	√	√
	15 KV ESD Protection	√	√	√
	Any Baudrate Support	√	√	√
	Patented ADDC	√	√	√
Software Features	Protocols	ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, Rtelnet, DNS, SNMP, HTTP, SMTP, SNTP, ARP, SSH, SSL		
	Utilities	NPort Driver Manager for Windows 95/98/ME/NT/2000/XP/2003/Vista		
	OS Driver Support	Windows 95/98/ME/NT/2000/XP/2003/XP x64/2003 x64/Vista x64 COM driver, Linux Real TTY driver, Unix fixed TTY driver		
	Configuration	Web console, serial console, Telnet console, SSH, or Windows utility		
Operation Mode	Standard	Real COM, TCP Server, TCP Client, UDP, Pair Connection, RFC2217, Terminal, Reverse Telnet, Ethernet Modem, Printer, PPP, Disabled		
	Secure	Secure Real COM, Secure TCP Server, Secure TCP Client, Secure Pair Connection, SSH, Reverse SSH		
Advanced Built-in Features	HMI LCM display with Four Push Buttons	---	---	---
	Serial Data Log	64 KB	64 KB	64 KB
	Offine Port Buffering	64 KB	64 KB	64 KB
	SD Card Support	---	---	√
	Buzzer	√	√	√
	Real-Time Clock	√	√	√
	Watch Dog Timer	√	√	√
Power	Power Input	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC
	Power Consumption	285 mA	430 mA	430 mA
Mechanical	Upper Casing: Aluminum (1 mm)	√	√	√
	External Components: PC (Polycarbonate)	√	√	√
	Lower Casing: SECC Sheet Metal (1 mm)	√	√	√
	Dimensions (W × H × D)	67 x 28 x 100.4 mm (2.63 x 1.1 x 3.95 in)	77 x 28 x 111 mm (3 x 1.1 x4 .37 in)	77 x 28 x 111 mm (3 x 1.1 x 4.37 in)
	DIN-Rail/Wall Mountable	√	√	√
Environment	Operating temperature	0 to 55°C (32 to 131°F), 5 to 95% RH		
	Storage temperature	-20 to 85°C (-4 to 185°F), 5 to 95% RH		
Regulatory Approvals	Safety	UL UL60950-1/ TÜV EN60950-1		
	EMC	FCC Part 15, Subpart B, Class A; CE EN55022 Class A; CE EN55024		
	EN61000-4-2 (ESD)	4 KV contact		
	EN61000-4-4 (EFT)	1 KV power		
	EN61000-4-5 (Surge)	2 KV power		
Warranty		5 years		

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Model Name		NPort 6250-S-SC	NPort 6450	NPort 6610-16
LAN	10/100M Ethernet	---	1	1
	100M Fiber	Single Mode	---	---
	Connector	SC	RJ45	RJ45
	Extension Slot	---	1	1
	10/100BaseT RJ45 Module	---	Optional	Optional
	Multi Mode SC Connector Module	---	Optional	Optional
	Single Mode SC Connector Module	---	Optional	Optional
	Parallel Port Module	---	Optional	Optional
	Power Over Ethernet (IEEE802.3af)	---	---	---
	1.5 KV Magnetic Isolation	√	√	√
Serial Interface	RS-232/422/485	2 ports, DB9 (Male)	4 ports, DB9 (Male)	16 ports, RJ45
	Speed	50 to 921.6 Kbps		
	Communication Parameters	Parity: None, Even, Odd, Space, Mark; Data Bits: 5, 6, 7, 8; Stop Bit(s): 1, 1.5, 2		
	Flow Control (RTC/CTS/ XON/XOFF)	√	√	√
	15 KV ESD Protection	√	√	√
	Any Baudrate Support	√	√	√
	Patented ADDC	√	√	√
Software Features	Protocols	ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, Rtelnet, DNS, SNMP, HTTP, SMTP, SNTP, ARP, SSH, SSL		
	Utilities	NPort Driver Manager for Windows 95/98/ME/NT/2000/XP/2003/Vista		
	OS Driver Support	Windows 95/98/ME/NT/2000/XP/2003/XP x64/2003 x64/Vista x64 COM driver, Linux Real TTY driver, Unix fixed TTY driver		
	Configuration	Web console, serial console, Telnet console, SSH, or Windows utility		
Operation Mode	Standard	Real COM, TCP Server, TCP Client, UDP, Pair Connection, RFC2217, Terminal, Reverse Telnet, Ethernet Modem, Printer, PPP, Disabled		
	Secure	Secure Real COM, Secure TCP Server, Secure TCP Client, Secure Pair Connection, SSH, Reverse SSH		
Advanced Built-in Features	HMI LCM display with Four Push Buttons	---	√	√
	Serial Data Log	64 KB	64 KB	64 KB
	Offine Port Buffering	64 KB	64 KB	64 KB
	SD Card Support	---	---	√
	Buzzer	√	√	√
	Real-Time Clock	√	√	√
	Watch Dog Timer	√	√	√
Power	Power Input	12 to 48 VDC	12 to 48 VDC	100 to 240 VAC, 47 to 63 Hz
	Power Consumption	430 mA	730 mA	mA
Mechanical	Upper Casing: Aluminum (1 mm)	√	√	√
	External Components: PC (Polycarbonate)	√	√	√
	Lower Casing: SECC Sheet Metal (1 mm)	√	√	√
	Dimensions (W × H × D)	77 x 28 x 111 mm (3 x 1.1 x 4.37 in)	158 x 33 x 103 mm (6.22 x 1.29 x 4 in)	440 x 44 x 195 mm (17.32 x 1.73 x 7.67 in)
	DIN-Rail/Wall Mountable	√	√	√
Environment	Operating temperature	0 to 55°C (32 to 131°F), 5 to 95% RH		
	Storage temperature	-20 to 85°C (-4 to 185°F), 5 to 95% RH	-20 to 70°C (-4 to 158°F), 5 to 95% RH	
Regulatory Approvals	Safety	UL UL60950-1/ TÜV EN60950-1		
	EMC	FCC Part 15, Subpart B, Class A; CE EN55022 Class A; CE EN55024		
	EN61000-4-2 (ESD)	4 KV contact		
	EN61000-4-4 (EFT)	1 KV power		
	EN61000-4-5 (Surge)	2 KV power		
Warranty		5 years		

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Secure Terminal Servers/Terminal Servers

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Terminal Server Selection Guide

Model Name		NPort 6610-16-48	NPort 6610-32	NPort 6610-32-48
LAN	10/100M Ethernet	1	1	1
	100M Fiber	---	---	---
	Connector	RJ45	RJ45	RJ45
	Extension Slot	1	1	1
	10/100BaseT RJ45 Module	Optional	Optional	Optional
	Multi Mode SC Connector Module	Optional	Optional	Optional
	Single Mode SC Connector Module	Optional	Optional	Optional
	Parallel Port Module	Optional	Optional	Optional
	Power Over Ethernet (IEEE802.3af)	---	---	---
	1.5 KV Magnetic Isolation	√	√	√
Serial Interface	RS-232/422/485	16 ports, DB9 (Male)	32 ports, DB9 (Male)	32 ports, RJ45
	Speed	50 to 921.6 Kbps		
	Communication Parameters	Parity: None, Even, Odd, Space, Mark; Data Bits: 5, 6, 7, 8; Stop Bit(s): 1, 1.5, 2		
	Flow Control (RTC/CTS/ XON/XOFF)	√	√	√
	15 KV ESD Protection	√	√	√
	Any Baudrate Support	√	√	√
	Patented ADDC	---	---	---
Software Features	Protocols	ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, Rtelnet, DNS, SNMP, HTTP, SMTP, SNTP, ARP, SSH, SSL		
	Utilities	NPort Driver Manager for Windows 95/98/ME/NT/2000/XP/2003/Vista		
	OS Driver Support	Windows 95/98/ME/NT/2000/XP/2003/XP x64/2003 x64/Vista x64 COM driver, Linux Real TTY driver, Unix fixed TTY driver		
	Configuration	Web console, serial console, Telnet console, SSH, or Windows utility		
Operation Mode	Standard	Real COM, TCP Server, TCP Client, UDP, Pair Connection, RFC2217, Terminal, Reverse Telnet, Ethernet Modem, Printer, PPP, Disabled		
	Secure	Secure Real COM, Secure TCP Server, Secure TCP Client, Secure Pair Connection, SSH, Reverse SSH		
Advanced Built-in Features	HMI LCM display with Four Push Buttons	√	√	√
	Serial Data Log	64 KB	64 KB	64 KB
	Offine Port Buffering	64 KB	64 KB	64 KB
	SD Card Support	√	√	√
	Buzzer	√	√	√
	Real-Time Clock	√	√	√
	Watch Dog Timer	√	√	√
Power	Power Input	18 to 72 VDC	100 to 240 VAC/VDC	18 to 72 VDC
	Power Consumption	mA	mA	mA
Mechanical	Upper Casing: Aluminum (1 mm)	√	√	√
	External Components: PC (Polycarbonate)	√	√	√
	Lower Casing: SECC Sheet Metal (1 mm)	√	√	√
	Dimensions (W × H × D)	440 x 44 x 195 mm (17.32 x 1.7 x 7.67 in)	440 x 44 x 195 mm (17.32 x 1.73 x 7.67 in)	440 x 44 x 195 mm (17.32 x 1.73 x 7.67 in)
	DIN-Rail/Wall Mountable	√	√	√
Environment	Operating temperature	0 to 55°C (32 to 131°F), 5 to 95% RH		
	Storage temperature	-20 to 70°C (-4 to 158°F), 5 to 95% RH		
Regulatory Approvals	Safety	UL UL60950-1/ TÜV EN60950-1		
	EMC	FCC Part 15, Subpart B, Class A; CE EN55022 Class A; CE EN55024		
	EN61000-4-2 (ESD)	4 KV contact		
	EN61000-4-4 (EFT)	1 KV power		
	EN61000-4-5 (Surge)	2 KV power		
Warranty		5 years		

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Model Name		NPort 6650-8	NPort 6650-8-48V	NPort 6650-16
LAN	10/100M Ethernet	1	1	1
	100M Fiber	---	---	---
	Connector	RJ45	RJ45	RJ45
	Extension Slot	1	1	1
	10/100BaseT RJ45 Module	Optional	Optional	Optional
	Multi Mode SC Connector Module	Optional	Optional	Optional
	Single Mode SC Connector Module	Optional	Optional	Optional
	Parallel Port Module	Optional	Optional	Optional
	Power Over Ethernet (IEEE802.3af)	---	---	---
	1.5 KV Magnetic Isolation	√	√	√
Serial Interface	RS-232/422/485	8 ports, DB9 (Male)	8 ports, DB9 (Male)	8 ports, RJ45
	Speed	50 to 921.6 Kbps		
	Communication Parameters	Parity: None, Even, Odd, Space, Mark; Data Bits: 5, 6, 7, 8; Stop Bit(s): 1, 1.5, 2		
	Flow Control (RTC/CTS/ XON/XOFF)	√	√	√
	15 KV ESD Protection	√	√	√
	Any Baudrate Support	√	√	√
	Patented ADDC	√	√	√
Software Features	Protocols	ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, Rtelnet, DNS, SNMP, HTTP, SMTP, SNTP, ARP, SSH, SSL		
	Utilities	NPort Driver Manager for Windows 95/98/ME/NT/2000/XP/2003/Vista		
	OS Driver Support	Windows 95/98/ME/NT/2000/XP/2003/XP x64/2003 x64/Vista x64 COM driver, Linux Real TTY driver, Unix fixed TTY driver		
	Configuration	Web console, serial console, Telnet console, SSH, or Windows utility		
Operation Mode	Standard	Real COM, TCP Server, TCP Client, UDP, Pair Connection, RFC2217, Terminal, Reverse Telnet, Ethernet Modem, Printer, PPP, Disabled		
	Secure	Secure Real COM, Secure TCP Server, Secure TCP Client, Secure Pair Connection, SSH, Reverse SSH		
Advanced Built-in Features	HMI LCM display with Four Push Buttons	√	√	√
	Serial Data Log	64 KB	64 KB	64 KB
	Offine Port Buffering	64 KB	64 KB	64 KB
	SD Card Support	---	---	√
	Buzzer	√	√	√
	Real-Time Clock	√	√	√
	Watch Dog Timer	√	√	√
Power	Power Input	100 to 240 VAC/VDC	18 to 72 VDC	100 to 240 VAC/VDC
	Power Consumption	430 mA	730 mA	mA
Mechanical	Upper Casing: Aluminum (1 mm)	√	√	√
	External Components: PC (Polycarbonate)	√	√	√
	Lower Casing: SECC Sheet Metal (1 mm)	√	√	√
	Dimensions (W × H × D)	77 x 28 x 111 mm (3 x 1.1 x 4.37 in)	158 x 33 x 103 mm (6.22 x 1.29 x 4 in)	440 x 44 x 195 mm (17.32 x 1.73 x 7.67 in)
	DIN-Rail/Wall Mountable	√	√	√
Environment	Operating temperature	0 to 55°C (32 to 131°F), 5 to 95% RH		
	Storage temperature	-20 to 70°C (-4 to 158°F), 5 to 95% RH		
Regulatory Approvals	Safety	UL UL60950-1/ TÜV EN60950-1		
	EMC	FCC Part 15, Subpart B, Class A; CE EN55022 Class A; CE EN55024		
	EN61000-4-2 (ESD)	4 KV contact		
	EN61000-4-4 (EFT)	1 KV power		
	EN61000-4-5 (Surge)	2 KV power		
Warranty		5 years		

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Terminal Server Selection Guide

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	Model Name	NPort 6650-16-48V	NPort 6650-32	NPort 6650-32-48V
LAN	10/100M Ethernet	1	1	1
	100M Fiber	---	---	---
	Connector	RJ45	RJ45	RJ45
	Extension Slot	1	1	1
	10/100BaseT RJ45 Module	Optional	Optional	Optional
	Multi Mode SC Connector Module	Optional	Optional	Optional
	Single Mode SC Connector Module	Optional	Optional	Optional
	Parallel Port Module	Optional	Optional	Optional
	Power Over Ethernet (IEEE802.3af)	---	---	---
	1.5 KV Magnetic Isolation	√	√	√
Serial Interface	RS-232/422/485	16 ports, DB9 (Male)	32 ports, DB9 (Male)	32 ports, RJ45
	Speed	50 to 921.6 Kbps		
	Communication Parameters	Parity: None, Even, Odd, Space, Mark; Data Bits: 5, 6, 7, 8; Stop Bit(s): 1, 1.5, 2		
	Flow Control (RTC/CTS/ XON/XOFF)	√	√	√
	15 KV ESD Protection	√	√	√
	Any Baudrate Support	√	√	√
	Patented ADDC	√	√	√
Software Features	Protocols	ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, Rtelnet, DNS, SNMP, HTTP, SMTP, SNTP, ARP, SSH, SSL		
	Utilities	NPort Driver Manager for Windows 95/98/ME/NT/2000/XP/2003/Vista		
	OS Driver Support	Windows 95/98/ME/NT/2000/XP/2003/XP x64/2003 x64/Vista x64 COM driver, Linux Real TTY driver, Unix fixed TTY driver		
	Configuration	Web console, serial console, Telnet console, SSH, or Windows utility		
Operation Mode	Standard	Real COM, TCP Server, TCP Client, UDP, Pair Connection, RFC2217, Terminal, Reverse Telnet, Ethernet Modem, Printer, PPP, Disabled		
	Secure	Secure Real COM, Secure TCP Server, Secure TCP Client, Secure Pair Connection, SSH, Reverse SSH		
Advanced Built-in Features	HMI LCM display with Four Push Buttons	√	√	√
	Serial Data Log	64 KB	64 KB	64 KB
	Offine Port Buffering	64 KB	64 KB	64 KB
	SD Card Support	---	---	√
	Buzzer	√	√	√
	Real-Time Clock	√	√	√
	Watch Dog Timer	√	√	√
Power	Power Input	18 to 72 VDC	100 to 240 VAC/VDC	18 to 72 VDC
	Power Consumption	mA	mA	mA
Mechanical	Upper Casing: Aluminum (1 mm)	√	√	√
	External Components: PC (Polycarbonate)	√	√	√
	Lower Casing: SECC Sheet Metal (1 mm)	√	√	√
	Dimensions (W × H × D)	77 x 28 x 111 mm (3 x 1.1 x 4.37 in)	158 x 33 x 103 mm (6.22 x 1.29 x 4 in)	440 x 44 x 195 mm (17.32 x 1.73 x 7.67 in)
	DIN-Rail/Wall Mountable	√	√	√
Environment	Operating temperature	0 to 55°C (32 to 131°F), 5 to 95% RH		
	Storage temperature	-20 to 70°C (-4 to 158°F), 5 to 95% RH		
Regulatory Approvals	Safety	UL UL60950-1/TÜV EN60950-1		
	EMC	FCC Part 15, Subpart B, Class A; CE EN55022 Class A; CE EN55024		
	EN61000-4-2 (ESD)	4 KV contact		
	EN61000-4-4 (EFT)	1 KV power		
	EN61000-4-5 (Surge)	2 KV power		
Warranty		5 years		

MOXA®

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Model Name		CN2510-8 CN2510-16	CN2510-8-48V CN2510-16-48V	CN2610-8 CN2610-16
LAN	10/100M Ethernet	1 port	1 port	2 ports
	Connector	RJ45	RJ45	RJ45
	1.5 KV Magnetic Isolation	√	√	√
Serial Interface	RS-232	8 ports (CN2510-8) 16 ports (CN2510-16)	8 ports (CN2510-8-48) 16 ports (CN2510-16-48)	8 ports (CN2610-8) 16 ports (CN2610-16)
	Connector	RJ45	RJ45	RJ45
	Speed	50 bps to 921.6 Kbps	50 bps to 921.6 Kbps	50 bps to 921.6 Kbps
	Communication Parameters	Parity: None, Even, Odd, Space, Mark; Data Bits: 5, 6, 7, 8; Stop Bit(s): 1, 1.5, 2		
	Flow Control (RTC/CTS/ XON/XOFF)	√	√	√
	15 KV ESD Protection	√	√	√
Software Features	Protocols	ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, Rtelnet, DNS, SNMP, SMTP, SNTP, ARP, PPP, SLIP		
	Utilities	Utility for Windows 95/98/ME/NT/2000/XP/2003		
	OS Driver Support	Windows 95/98/ME/NT/2000/XP/2003/XP x64/2003 x64 COM driver, Linux Real TTY driver, SCO Unix, SCO OpenServer 5, UnixWare 7, UnixWare 2.1.x, SVR4.2, Unix		
	Configuration	Serial console, Telnet console		
	Authentication	RADIUS, dial back, PAP, CHAP, local user/password		
	Management	SNMP MIB II		
	IP Routing	Static, RIP-I, RIP-II		
Operation Modes		Real COM, TCP Server, UDP, Reverse Telnet, Disabled, Terminal, Reverse Terminal, Printer, PPP, Multi-Host TTY, Multiplex		
			−	DRDAS
Advanced Built-in Features		HMI LCM display with four push buttons, buzzer, real-time clock, watchdog timer		
Power Input	Power Input	100 to 240 VAC/VDC	38 to 72 VDC	100 to 240 VAC/VDC
	Power Consumption	235 mA @ 100V, 145 mA @ 240V	260 mA @ 48V (max.)	235 mA @ 100V, 145 mA @ 240V
Mechanical	Casing: Aluminum (1 mm)	√	√	√
	Dimensions (W × H × D)	440 x 1.77 x 198 mm (17.3 x 1.77 x 7.8 in)		
	DIN-Rail/Wall Mountable	√	√	√
Environment	Operating Temperature	0 to 55°C (32 to 131°F), 5 to 95% RH		
	Storage Temperature	-20 to 70°C (-4 to 158°F), 5 to 95% RH		
Regulatory Approvals	Safety — UL	UL60950	UL60950	UL60950
	Safety — TÜV	EN60950	EN60950	EN60950
	EMC — FCC Part 15, Subpart B	Class A	Class A	Class A
	EMC — CE EN55022	Class A	Class A	Class A
	EMC — EN55024	√	√	√
	Power — EN61000-4-2 (ESD)	4 KV contact		
	Power — EN61000-4-4 (EFT)	1 KV (Power)		
	Power — EN61000-4-5 (Surge)	2 KV (Power)		
Warranty		5 years		

4

Secure Terminal Servers/Terminal Servers

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NPort 6150

1-port Secure Terminal Server

Features

> **Easy way to make serial devices Internet ready**

> **Versatile socket operating modes, including TCP Server, TCP Client, UDP, Pair Connection, Real COM, and RFC2217**

> **Secure modes for TCP Server, TCP Client, Pair Connection, and Real COM**

> **Any baudrate supported with high precision**

> **2 or 4-wire RS-485 with patented ADDC™ (Automatic Data Direction Control)**

> **802.3af support (Power Over Ethernet) - under development**

> **Enhanced remote configuration with https and SSH**

> **Port buffers to hold serial data when Ethernet is off-line**

Overview

The NPort 6150 supports SSL and SSH connections, which means that it can connect a serial device to Ethernet with encryption. The 3-in-1 serial port supports RS-232, RS-422, and RS-485 communication, and the interface may be selected or changed in the configuration menu.

Secure Data Transmission

The security of information is a very important concern when connecting serial devices to Ethernet. The NPort 6150 supports the SSL and SSH protocols, both of which ensure that data is sent over a secure TCP/IP Ethernet connection. Users can rest assured that their serial data is transmitted securely over the network.

Ordering Information
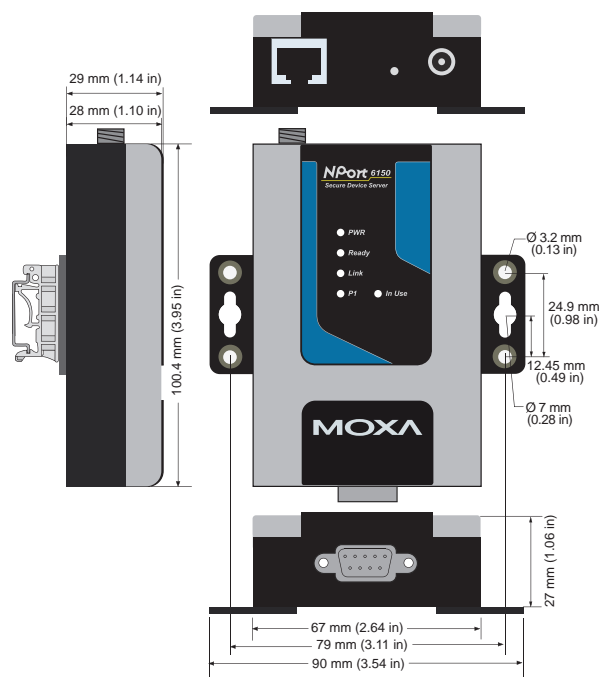
NPort 6150-US: 1-port Secure Terminal Server

Package Checklist

• 1 NPort 6150

• Quick Installation Guide
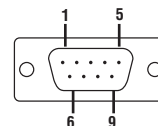
• Document and Software CD-ROM

• Power Adaptor

Optional Accessories

DK-35A: DIN-Rail Mounting Kit (35 mm)

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Dimensions (unit = mm)

29 mm (1.14 in)
28 mm (1.10 in)
100.4 mm (3.95 in)

Ø 3.2 mm (0.13 in)
24.9 mm (0.98 in)
12.45 mm (0.49 in)
Ø 7 mm (0.28 in)

27 mm (1.06 in)

67 mm (2.64 in)
79 mm (3.11 in)
90 mm (3.54 in)

DB9 (Male) RS-232, RS-422, 2/4-wire RS-485 port

PIN	RS-232	RS-422/4-wire RS-485	2-wire RS-485
1	DCD	TxD-(A)	---
2	RxD	TxD+(B)	---
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	---	---
7	RTS	---	---
8	CTS		---

4

Secure Terminal Servers/Terminal Servers

: Specifications

LAN
Ethernet: 1 10/100 Mbps, RJ45
Protection: Built-in 1.5 KV magnetic isolation

Serial
No. of Ports: 1
Interface: RS-232/422/485, DB9 (Male)

Serial Communication Parameters
Parity: None, Even, Odd, Space, Mark
Data Bits: 5, 6, 7, 8
Stop Bit(s): 1, 1.5, 2
Flow Control: RTS/CTS, XON/XOFF
Speed: 50 bps to 921.6 Kbps
Console Ports: RS-232 console

Software Features
Protocols: ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, DNS, SNMP, HTTP, SMTP
Utilities: NPort Search Utility for Windows 95/98/ME/NT/2000/XP/2003/Vista
Security Protocols: DES, 3DES, AES, Radius, Local,PAP, CHAP
OS Driver Support: Windows 95/98/ME/NT/2000/XP/2003/XP x 64/2003 x 64 COM driver, Linux Real TTY driver, Unix
Configuration: Web/serial/Telnet console

Power Requirements
Power Input: 12 to 48 VDC

Mechanical Specifications
Material: Aluminum (1 mm)

Gross Weight: 700g

Environment
Operating Temperature:
0 to 55°C (32 to 131°F), 5 to 95% RH
Storage Temperature:
-20 to 85°C (-4 to 185°F), 5 to 95%RH

Regulatory Approvals
EMC:
CE: EN55022 Class A/EN55024
FCC: FCC Part 15 Subpart B, Class A
Safety:
UL: UL60950-1
TÜV: EN60950-1
Warranty: 5 years
MTBF: 231709

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NPort 6250 Series

2-port Secure Terminal Server

Features

> Easy way to make serial devices Internet ready

> Versatile socket operating modes, including TCP Server, TCP Client, UDP, Pair Connection, Real COM, and RFC2217

> Secure modes for TCP Server, TCP Client, Pair Connection, and Real COM

> Any baudrate supported with high precision

> 10/100BaseTX RJ45 port or 100BaseFX port (SC connector, single/multi mode)

> Port buffers to hold serial data when Ethernet is off-line

> SD slot for optional expansion of port buffers

Overview

The NPort 6250's two serial ports can be independently configured for RS-232, RS-422, or RS-485 communication. Both 2-wire and 4-wire RS-485 are supported. Models are available for both copper and fiber (single-mode or multi-mode) Ethernet ports.

No Data Loss if Ethernet Connection Fails

The NPort 6250 is a reliable device server that provide users with secure serial-to-Ethernet data transmission and a customer-oriented hardware design. If the Ethernet connection fails, the NPort 6250 will queue all serial data in its internal 64 KB port buffer. When the Ethernet connection is re-established, the NPort 6250 will immediately release all data in the buffer in the order that it was received. Users can increase the port buffer size by installing an SD card.

Ordering Information

NPort 6250: 2-port RS-232/422/485 to Ethernet Secure Terminal Server

NPort 6250-M-SC: 2-port RS-232/422/485 to one Multi Mode Fiber Ethernet Secure Terminal Server

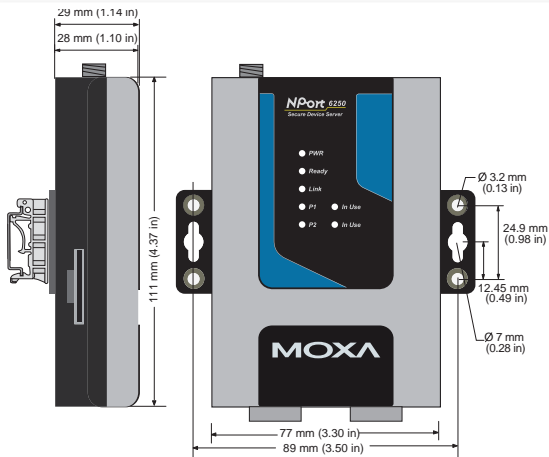**NPort 6250-S-SC:** 2-port RS-232/422/485 to one Single Mode Fiber Ethernet Secure Terminal Server

Package Checklist

• 1 NPort 6250

• Quick Installation Guide
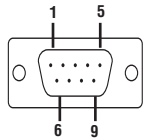
• Document and Software CD-ROM

• Power Adaptor

Optional Accessories

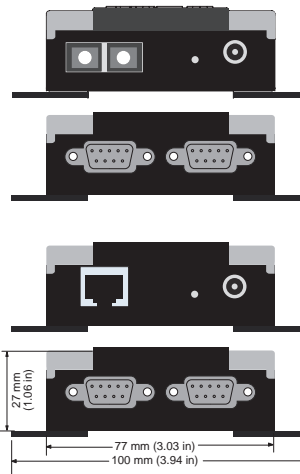**DK-35A:** DIN-Rail Mounting Kit (35 mm)

Dimensions (unit = mm)

29 mm (1.14 in)
28 mm (1.10 in)
111 mm (4.37 in)
Ø 3.2 mm (0.13 in)
24.9 mm (0.98 in)
12.45 mm (0.49 in)
Ø 7 mm (0.28 in)
77 mm (3.30 in)
89 mm (3.50 in)

NPort 6250-M-SC/6250-S-SC

NPort 6250

27 mm (1.06 in)
77 mm (3.03 in)
100 mm (3.94 in)

Male DB9 RS-232, RS-422, 2/4-wire RS-485 port

PIN	RS-232	RS-422/ 4-wire RS-485	2-wire RS-485
1	DCD	TxD-(A)	---
2	RxD	TxD+(B)	---
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)

PIN	RS-232	RS-422/ 4-wire RS-485	2-wire RS-485
5	GND	GND	GND
6	DSR	---	---
7	RTS	---	---
8	CTS	---	---

Specifications

LAN
NPort 6250-S-SC/NPort 6250-M-SC
Fiber Port: 1 100BaseFX port (SC connector)
NPort 6250
Ethernet: 1 10/100 Mbps, RJ45
Protection: Built-in 1.5 KV magnetic isolation

Optical Fiber
Distance:
Multi Mode: 0 to 2 km, 1310 nm (62.5/125 µm, 500 MHz*km)
Single Mode: 0 to 40 km, 1310 nm (9/125 µm, 3.5 PS/(nm*km))
Min. TX Output:
Multi Mode: -20 dBm
Single Mode: 0 to 40 km, -5 dBm
Max. TX Output:
Multi Mode: -14 dBm
Single Mode: 0 to 40 km, 0 dBm
Sensitivity:
Multi Mode: -34 to -30 dBm
Single Mode: -36 to -32 dBm

Serial
No. of ports: 2
Interface: RS-232/422/485, DB9 (Male)
Serial Communication Parameters
Parity: None, Even, Odd, Space, Mark
Data Bits: 5, 6, 7, 8
Stop Bit(s): 1, 1.5, 2
Flow Control: RTS/CTS, XON/XOFF
Speed: 50 bps to 921.6 Kbps
Console Ports: RS-232 console x 1 (Port 1)
Storage: One SD slot

Software Features
Protocols: ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, DNS, SNMP, HTTP, SMTP, ARP, SSH, SSL, PPPoE, DDNS, RIP
Utilities: Windows utility for Windows 98/ME/2000/XP/2003/XP x64/ 2003 x64/Vista x64
Security Protocols: DES, 3DES, AES, Radius, Local,PAP, CHAP
OS Driver Support: Windows 95/98/ME/NT/2000/XP/2003/ XP x64/2003 x64/Vista x64 COM driver
Configuration: Web/serial/Telnet console
Power Requirements
Power Input: 12 to 48 VDC
Mechanical Specifications
Material: Aluminum (1 mm)
Gross Weight: 730g
Environment
Operating Temperature: 0 to 55°C (32 to 131°F), 5 to 95% RH
Storage Temperature
-20 to 85°C (-4 to 185°F), 5 to 95%RH
Regulatory Approvals
EMC:
CE: EN55022 Class A/EN55024
FCC: FCC Part 15 Subpart B, Class A
Safety:
UL: UL60950-1
TÜV: EN60950-1
Warranty: 5 years
MTBF:
NPort 6250: 226128 hours
NPort 6250-M: 225762 hours
NPort 6250-S: 225762 hours

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Secure Terminal Servers/Terminal Servers

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NPort 6450

4-port Secure Terminal Server

Features

> LCD control panel for IP address configuration

> Versatile socket operating modes, including TCP Server, TCP Client, UDP, Pair Connection, Real Com driver, and RFC2217

> Secure modes for TCP Server, TCP Client, Pair Connection, and Real COM

> Any baudrate supported with high precision

> 10/100BaseTx Ethernet port supporting 802.3af Power Over Ethernet (POE) - under development

> Port buffers to hold serial data when Ethernet is off-line

> SD slot for optional expansion of port buffers

> Slot for network expansion module

Overview

The NPort 6450 is a secure device server with 4 RS-232/422/485 serial ports. Serial devices of any type can be connected to the NPort 6450, with all four devices using the same IP address. The Ethernet port can be configured for a normal or a secure TCP/IP connection.

Ordering Information

NPort 6450: 4-port RS-232/422/485 to Ethernet Secure Terminal Server
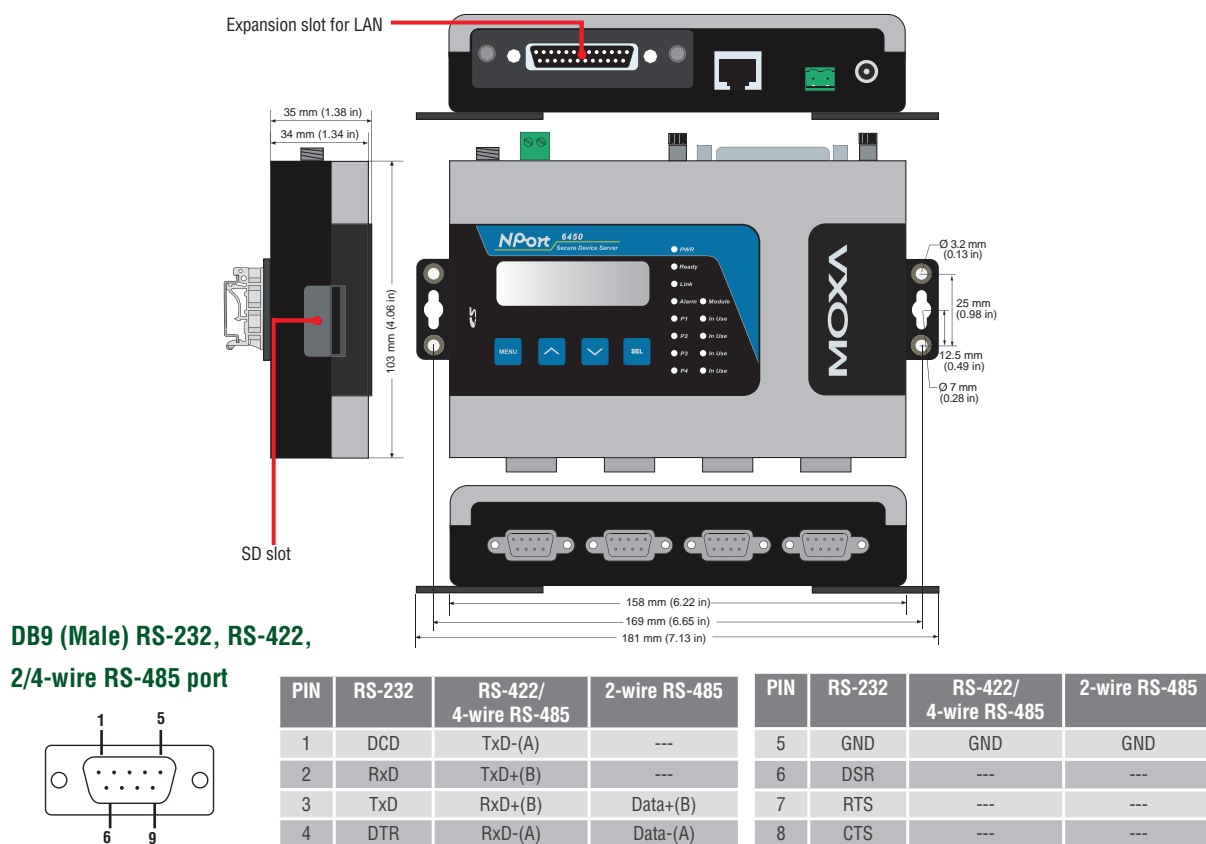
Package Checklist

- 1 NPort 6450
- Quick Installation Guide
- Document and Software CD-ROM
- Power Adaptor

Optional Accessories

DK-35A: DIN-Rail Mounting Kit (35 mm)

Network Module: See page 12-11

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Secure Terminal Servers/Terminal Servers

4

Dimensions (unit = mm)

Expansion slot for LAN

35 mm (1.38 in)
34 mm (1.34 in)
103 mm (4.06 in)

Ø 3.2 mm (0.13 in)
25 mm (0.98 in)
12.5 mm (0.49 in)
Ø 7 mm (0.28 in)

SD slot

158 mm (6.22 in)
169 mm (6.65 in)
181 mm (7.13 in)

DB9 (Male) RS-232, RS-422, 2/4-wire RS-485 port

PIN	RS-232	RS-422/ 4-wire RS-485	2-wire RS-485	PIN	RS-232	RS-422/ 4-wire RS-485	2-wire RS-485
1	DCD	TxD-(A)	---	5	GND	GND	GND
2	RxD	TxD+(B)	---	6	DSR	---	---
3	TxD	RxD+(B)	Data+(B)	7	RTS	---	---
4	DTR	RxD-(A)	Data-(A)	8	CTS	---	---

Specifications

LAN
Ethernet: 1 10/100 Mbps, RJ45
Protection: Built-in 1.5 KV magnetic isolation

Optical Fiber (Network Module)
Distance:
Multi Mode: 0 to 2 km, 1310 nm (62.5/125 µm, 500 MHz*km)
Single Mode: 0 to 40 km, 1310 nm (9/125 µm, 3.5 PS/(nm*km))

Min. TX Output
Multi Mode: -20 dBm
Single Mode: 0 to 40 km, -5 dBm

Max. TX Output
Multi Mode: -14 dBm
Single Mode: 0 to 40 km, 0 dBm

Sensitivity
Multi Mode: -34 to -30 dBm
Single Mode: -36 to -32 dBm

Serial
No. of Ports: 4
Interface: RS-232/422/485, DB9 (Male)

Serial Communication Parameters
Parity: None, Even, Odd, Space, Mark
Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2
Flow Control: RTS/CTS, XON/XOFF

Speed: 50 bps to 921.6 Kbps
Console Ports: RS-232 console x 1 (port 1)
Storage: One SD slot

Software Features
Protocols: ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, DNS, SNMP, HTTP, SMTP, ARP, SSH, SSL, PPPoE, DDNS, RIP
Utilities: Windows utility for Windows 98/ME/2000/XP/2003/XP x64/ 2003 x64/Vista x64
Security Protocols: DES, 3DES, AES, Radius, Local,PAP, CHAP
OS Driver Support: Windows 95/98/ME/NT/2000/XP/2003/XP x64/ 2003 x64/Vista x64 COM driver
Configuration: Web/serial/Telnet console

Power Requirements
Power Input: 12 to 48 VDC

Mechanical Specifications
Material: SECC sheet metal (0.8 mm)
Gross Weight: 1020g

Environment
Operating Temperature: 0 to 55°C (32 to 131°F), 5 to 95% RH
Storage Temperature: -20 to 70°C (-4 to 158°F), 5 to 95%RH

Regulatory Approvals
EMC: CE: EN55022 Class A/EN55024
FCC: FCC Part 15 Subpart B, Class A
Safety: UL: UL60950-1, TÜV: EN60950-1

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Secure Terminal Servers/Terminal Servers

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NPort 6600 Series

8, 16, and 32-port RS-232/422/485 Rackmount Terminal Servers

Features

> Up to 32 ports for high density environments

> SSL support for secure communication

> Secure remote management and configuration with SSH or SSL

> Powerful DES, 3DES, and AES hardware encryption engine

> Any baudrate allowed

> 10/100BaseTx Ethernet port supporting 802.3af Power Over Ethernet (POE) - under development

> Port buffers to hold serial data if Ethernet fails

> SD slot for optional expansion of port buffers

> Slot for network expansion module

Overview

The NPort 6600 is designed to connect higher densities of serial devices to the Ethernet. Models are available with 8, 16, or 32 ports. When establishing network connections to a larger number of serial devices or equipment console ports, greater security may be needed for TCP data. The NPort 6600 supports secure Ethernet communication between computers and serial devices with DES, 3DES, and AES, three of the most popular standards for data encryption.

Easy Installation with LCD Control Panel

The NPort 6600 has a built-in LCD control panel that allows data input, configuration, and mode selection. The panel displays the server name, serial number, and IP address. Parameters such as IP address, netmask, and gateway, can be quickly and easily modified.
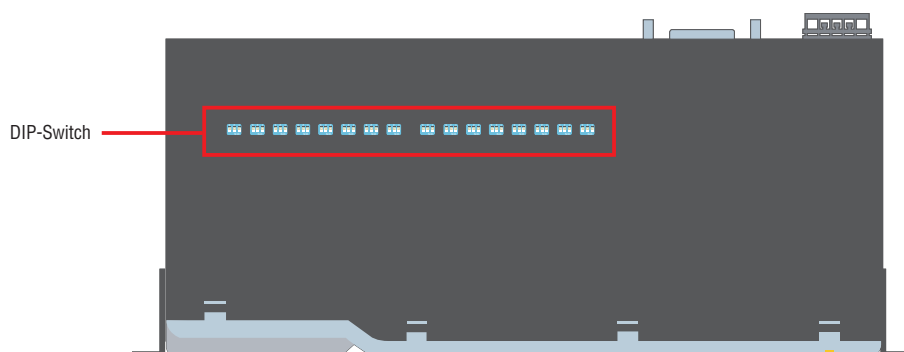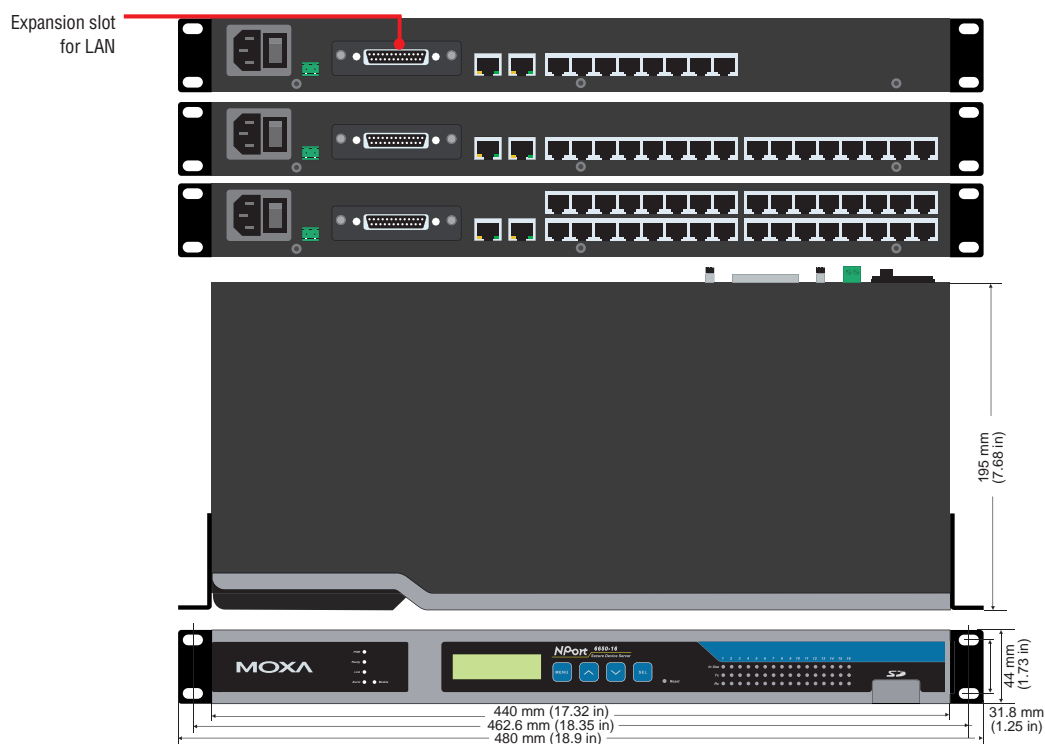
Adjustable Resistor Values for RS-485

The NPort 6600 provides adjustable termination, pull high, and pull low resistors for RS-485 communication. In some critical environments, termination resistors may be needed to prevent the reflection of serial signals. Pull high and pull low resistors may also need adjustment so the electrical signal is not corrupted. Since no set of resistor values works for every environment, the NPort 6600 allows manual adjustment of the resistor values for each serial port, using built-in DIP switches.
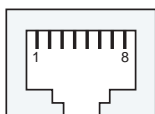
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DIP Switches for Adjustment of Resistors

DIP-Switch

Dimensions (unit = mm)

Expansion slot
for LAN

195 mm
(7.68 in)

44 mm
(1.73 in)

440 mm (17.32 in)
462.6 mm (18.35 in)
480 mm (18.9 in)

31.8 mm
(1.25 in)

NPort 6610 RJ45 RS-232 port

Pin	RS-232
1	DSR (in)
2	RTS (out)
3	GND
4	TxD (out)
5	RxD (in)
6	DcD (in)
7	CTS (in)
8	DTR (out)

NPort 6650 RJ45 RS-232/422/485 port
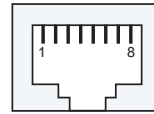
Pin	RS-232	RS-422/485 (4W)	RS-232
1	DSR (in)	---	---
2	RTS (out)	TxD+	---
3	GND	GND	GND
4	TxD (out)	TxD-	---
5	RxD (in)	RxD+	Data+
6	DcD (in)	RxD-	Data-
7	CTS (in)	---	---
8	DTR (out)	---	---

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: Ordering Information

NPort 6610-16: 16-port RS-232 to Ethernet Secure Terminal Server

NPort 6610-16-48V: 16-port RS-232 to Ethernet Secure Terminal Server, 48 VDC Power Input

NPort 6610-32: 32-port RS-232 to Ethernet Secure Terminal Server

NPort 6610-32-48V: 32-port RS-232 to Ethernet Secure Terminal Server, 48 VDC Power Input

NPort 6650-8: 8-port RS-232/422/485 to Ethernet Secure Terminal Server

NPort 6650-8-48V: 8-port RS-232/422/485 to Ethernet Secure Terminal Server, 48 VDC Power Input

NPort 6650-16: 16-port RS-232/422/485 to Ethernet Secure Terminal Server

NPort 6650-16-48V: 16-port RS-232/422/485 to Ethernet Secure Terminal Server, 48 VDC Power Input

NPort 6650-32: 32-port RS-232/422/485 to Ethernet Secure Terminal Server

NPort 6650-32-48V: 32-port RS-232/422/485 to Ethernet Secure Terminal Server, 48 VDC Power Input

Package Checklist

• 1 NPort 6600 Secure Device Server

• Quick Installation Guide

• Document and Software CD ROM

• Power Cord (AC model only)

• CBL-RJ45M9-150 x 1

Optional Accessories

Power Cord: See page 12-10

Serial Cable & Serial Adaptor: See page 12-4

Network Expansion Module: See page 12-11

Expansion Module		6150	6250	6450	6610-8 6650-8	6610-16 6650-16	6650-32
NM-TX01	1 10/100BaseTX port	---	---	√	√	√	√
NM-TX02	2 10/100BaseTX ports	---	---	√	√	√	√
NM-FX01-S-SC	1 100BaseFX port, single mode, SC connector	---	---	√	√	√	√
NM-FX01-M-SC	1 100BaseFX port, multi mode, SC connector	---	---	√	√	√	√
NM-FX02-S-SC	2 100BaseFX ports, single mode, SC connector	---	---	√	√	√	√
NM-FX02-M-SC	2 100BaseFX ports, multi mode, SC connector	---	---	√	√	√	√
NM-PR01	1 parallel port	---	---	√	√	√	√
NM-GPRS	1 GPRS modem port	---	---	√	√	√	√
NM-Modem	1 PSTN modem port with RJ11 connector	---	---	√	√	√	√

Secure Terminal Servers/Terminal Servers

: Specifications

LAN

Ethernet: 10/100 Mbps, RJ45

Protection: Built-in 1.5 KV magnetic isolation

Optical Fiber (Network Module)

Distance:

Multi mode: 0 to 2 km, 1310 nm (62.5/125 µm, 500 MHz*km)

Single mode: 0 to 40 km, 1310 nm (9/125 µm, 3.5 PS/(nm*km))

Min. TX Output:

Multi mode: -20 dBm, Single mode: 0 to 40 km, -5 dBm

Max. TX Output:

Multi mode: -14 dBm, Single mode: 0 to 40 km, 0 dBm

Sensitivity:

Multi mode: -34 to -30 dBm,

Single mode: -36 to -32 dBm

Serial:

NPort 6610

Interface: RS-232, 8-pin RJ45

Signals: TxD, RxD, RTS, CTS, DTR, DSR, GND, DCD

NPort 6650

Interface: RS-422/485, 8-pin RJ45

Signals: RS-232: TxD, RxD, RTS, CTS, DTR, DSR, GND, DCD

RS-422: Tx+, Tx-, Rx+, Rx-, GND

RS-485 (2-wire): Data+, Data-, GND

RS-485 (4-wire): Tx+, Tx-, Rx+, Rx-, GND

RS-485 Data Direction Control:

Patented Automatic Data Direction Control (ADDC™)

Serial Line protection: 15 KV EDS for all signal

Power line protection: 1 KV Burst (EFT), EN6200-4-4

0.5 KV Surge, EN61000-4-5

Serial Communication Parameters

Parity: None, Even, Odd, Space, Mark

Data Bits: 5, 6, 7, 8

Stop Bit(s): 1, 1.5, 2

Flow Control: RTS/CTS, XON/XOFF, DTR/DSR

Speed: 50 bps to 921.6 Kbps

Console Port: RS-232 console × 1

Storage: One SD slot

Software Features

Protocols: ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, DNS, SNMP, ARP, HTTP, SMTP, HTTPS, SSL, SSH, PPPoE, DDNS

Utilities: Windows utility for Windows 98/ME/2000/XP/2003/XP x64/2003 x64/Vista x64

Security Protocols: DES/3DES/AES

OS Driver Support: Windows 95/98/ME/NT/2000/XP/2003/XP x64/2003 x64/Vista x64 COM driver

Configuration: Web console, serial console, Telnet console

Power Requirements

Power input:

100 to 240 VAC/VDC for AC models, ±48 VDC for 48 VDC models

Mechanical Specifications

Material: SECC sheet metal (1 mm)

Gross Weight:

NPort 6600-8: 3460g

NPort 6600-16: 3580g

Environmental

Operating Temperature: 0 to 55°C (32 to 131°F), 5 to 95% RH

Storage Temperature: -20 to 70°C (-4 to 158°F), 5 to 95% RH

Regulatory Approvals

EMC: FCC Class A, CE Class A

Safety: UL, CUL, TUV

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Secure Terminal Servers/Terminal Servers

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IP Systèmes, importateur/distributeur des solutions de communication industrielle MOXA en France Tel : 0820 200 290 (15cts/min)

CN2510 Series

8 and 16-port RS-232 Terminal Servers


Features

> **LCD control panel for easy on-site management**

> **Up to 16 dial-in users when operating as stand-alone remote access server**

> **PPP/SLIP with RADIUS authentication and RIP I/II routing protocol**

> **Real COM/TTY drivers for Windows and Linux**

> **±48 VDC for telecom applications**

Remote Console Management

For most companies, the performance of IT equipment is critical to daily operation. To keep a server, router, PBX, or leased-line modem working properly, it is important to minimize downtime and troubleshoot faulty devices quickly. KVM is commonly used for in-band management of devices that are equipped with a screen and keyboard. However, RS-232 console access is often used as a last resort for all devices.

The CN2510 provides an easy console management solution in a convenient 1U rackmount package. With its RS-232 ports, connections are easily established to the console ports of network equipment, such as Unix servers or routers, for centralized management of the attached devices. Each device's RS-232 console port becomes a network-accessible node, giving users Telnet access from anywhere on the network for configuration and management of the device. Full modem control signals are supported, ensuring compatibility with a wide range of serial peripherals.
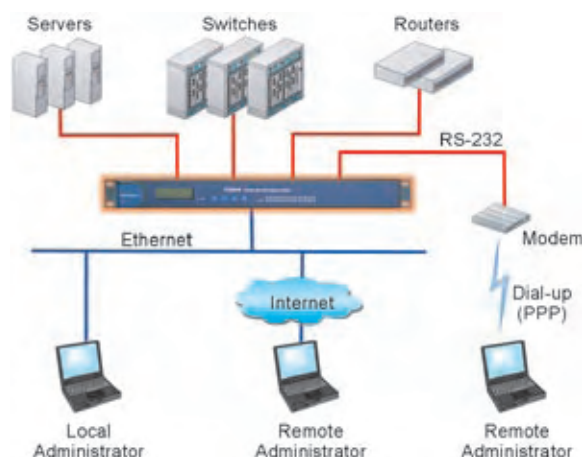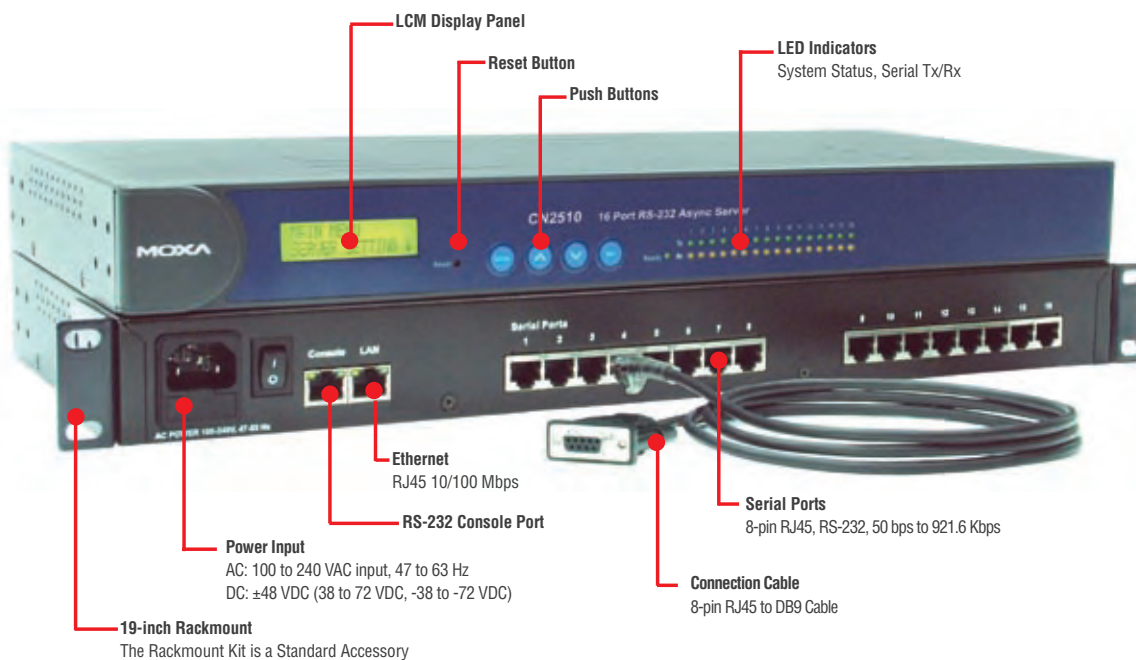

Security Functions

User Authentication

It is very important that access is strictly controlled in a console management solution, and user privileges should be validated before a console port connection is allowed. The CN2510's authentication procedure involves verifying the username and password against an internal database or a RADIUS server.
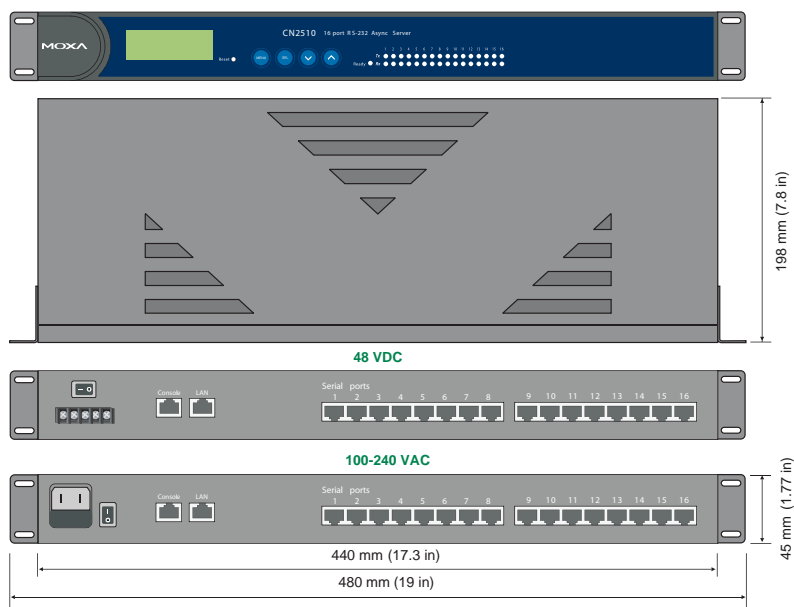
Dial-back

When a dial-up connection is used for out-of-band management, the CN2510 provides a convenient dial-back function. Instead of accepting a connection request directly, the CN2510 calls back the management host to establish the connection. The dial-back function helps ensure that only registered users or hosts can remotely connect to the network through the CN2510. It also helps consolidate long distance phone costs.
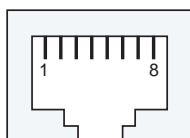
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Secure Terminal Servers/Terminal Servers

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CN2510 Series

LCM Display Panel

Reset Button

Push Buttons

LED Indicators
System Status, Serial Tx/Rx

Ethernet
RJ45 10/100 Mbps

RS-232 Console Port

Serial Ports
8-pin RJ45, RS-232, 50 bps to 921.6 Kbps

Power Input
AC: 100 to 240 VAC input, 47 to 63 Hz
DC: ±48 VDC (38 to 72 VDC, -38 to -72 VDC)

Connection Cable
8-pin RJ45 to DB9 Cable

19-inch Rackmount
The Rackmount Kit is a Standard Accessory

Dimensions (unit = mm)

48 VDC

100-240 VAC

198 mm (7.8 in)

45 mm (1.77 in)

440 mm (17.3 in)

480 mm (19 in)

: Pin Assignment

RJ45 RS-232 Port

Pin	Signals
1	DSR (in)
2	RTS (out)
3	GND
4	TxD (out)

Pin	Signals
5	RxD (in)
6	DCD (in)
7	CTS (in)
8	DTR (out)

4

Secure Terminal Servers/Terminal Servers

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: Specifications

Hardware
CPU: 32-bit RISC

RAM: 4 MB

Flash ROM: 2 MB

I/O Controller: 16C550C compatible UART

LAN
Protection: Built-in 1.5 KV magnetic isolation

No. of Ports: 1

Speed: 10/100 Mbps

Serial
Interface: RS-232, 8-pin RJ45

No. of Ports: 16 ports (CN2510-16), 8 ports (CN2510-8)

Signals: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND

Console Port: 1 RS-232 console port (8-pin RJ45)

Serial Line Protection: 15 KV ESD for all signals

Power Line Protection
1 KV Burst (EFT), EN61000-4-4

0.5 KV Surge, EN61000-4-5

Serial Communication Parameters
Parity: None, Even, Odd, Space, Mark

Data Bits: 5, 6, 7, 8

Stop Bit(s): 1, 1.5, 2

Flow Control: RTS/CTS, XON/XOFF

Speed: 50 bps to 921.6 Kbps

Software
Protocols: TCP/IP, UDP, ICMP, NetBUEI, DHCP, PPP, SLIP, CSLIP

Applications: Telnet, rlogin, rtelnet, DNS, LPD, RCP, WINS, Dial-on-Demand

Security: RADIUS, dialback, PAP, CHAP, local user / password

Management: SNMP MIB-II

IP Routing: Static, RIP-I, RIP-II.

Software Features
Utilities: Utility for Windows 95/98/ME/NT/2000/XP/2003

OS Driver Support: Windows 95/98/ME/NT/2000/XP/2003/XP x64/ 2003 x64 COM driver, Linux real TTY driver, SCO Unix, SCO OpenServer 5, UnixWare 7, UnixWare 2.1.x, SVR4.2

Fixed TTY Driver: SCO OpenServer 5, SCO Unixware 7.x, QNX

Real TTY Driver: Linux (kernel 2.2.x, 2.4.x, 2.6.x)

MOXA ASPP: Windows 9x/NT/ME/2K/XP/2003, Linux, UNIX

Socket: Standard BSD socket interface

Applications
Terminal Sessions: 8 sessions per port

Power Requirements
Power Input: AC: 100 to 240 VAC, 47 to 63 Hz

DC: ±48 VDC (38 to 72 VDC, -38 to -72 VDC)

Power Consumption: CN2510-8/16: 235 mA for 100V, 145 mA for 240V

CN2510-8/16-48V: 260 mA (at 48V max.)

Environment
Operating Temperature: 0 to 55°C (32 to 131°F), 5 to 95% RH

Storage Temperature: -20 to 70°C (-4 to 158°F), 5 to 95% RH

Gross Weight
CN2510-8: 3580g
CN2510-8-48: 3340g
CN2510-16: 3600g
CN2510-16-48: 3400g

Dimensions
440 x 198 x 45 mm (17.3 x 7.8 x 1.77 in)

Regulatory Approvals
EMC:

CE: EN55022 Class A / EN55024

FCC: FCC part 15 subpart B, Class A

Safety:

UL: UL60950

TÜV: EN60950

Warranty: 5 years

MTBF:
CN2510-8: 1346703 hours
CN2510-16: 101349 hours

: Ordering Information

CN2510-8: 8-port RS-232 Terminal Server

CN2510-8-48V: 8-port RS-232 Terminal Server

CN2510-16: 16-port RS-232 Terminal Server

CN2510-16-48V: 16-port RS-232 Terminal Server

Optional Accessories

Power Cord: See page 12-10

Serial Cable & Serial Adapter: See page 12-4

Package Checklist

• 1 CN2510

• Quick Installation Guide

• Document and Software CD-ROM

• Power Cord x 1 (AC model only)

• CBL-RJ45F9-150 x 1

• CBL-RJ45M25-150 x 1

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MOXA®

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CN2610 Series

8 and 16-port Dual LAN RS-232 Terminal Servers

Features

> LCD control panel for easy on-site management

> Two IP and MAC addresses

> Dual-host Redundant Data Acquisition Solution (DRDAS)

> Two priority levels with one primary and three secondary connections

> Real COM/TTY drivers for Windows and Linux

> Console management solution for routers, PBX, servers

4

**Secure Terminal Servers/Terminal Servers**

Two Dual-Host, Dual-LAN CN2610 Servers in a Redundant System

In order to reduce the occurrence of single points of failure, different solutions have been developed for redundancy at the different levels of a system. "Watchdog" hardware is required to utilize redundant hardware, and a "Token" switching mechanism is required for the software. The CN2610 supports Dual-host Redundant Data Acquisition Solution (DRDAS), which is designed for data acquisition applications that require a high level of redundancy.
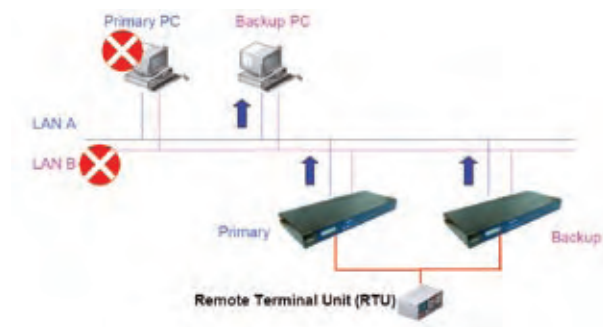
LAN Redundancy

The CN2610 includes two LAN ports that can be connected to separate LAN networks. Using a routing table, the CN2610 can selectively send packets to different networks. Hosts can also connect to the CN2610 through two different IP addresses and from different LAN networks. A PC with dual network cards can maintain a connection to the CN2610 through LAN B if LAN A crashes.
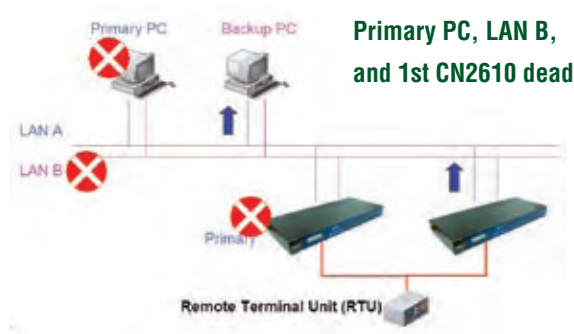

Primary PC and LAN A dead
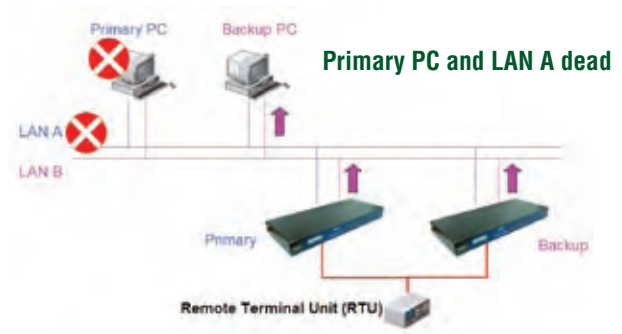
Host Redundancy

The CN2610 is able to maintain simultaneous connections to both a primary PC and backup PC. If the primary PC becomes nonresponsive, the backup PC will take control immediately.
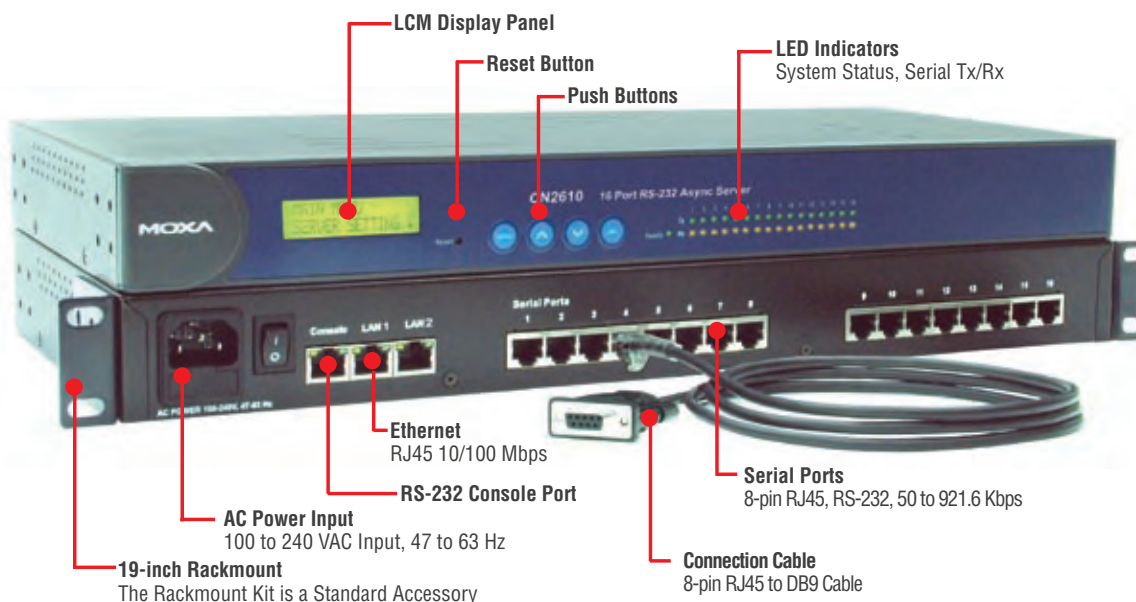
4

Data Acquisition Redundancy

The CN2610 uses 4 IP addresses in a DRDAS system. In the figure on the previous page, RTU data is received through a serial port on the CN2610, and the data is transmitted to two PCs on two different LANs using a total of four IP addresses. One of the four IP addresses is the primary IP for transmitting data downstream to the RTU. The other three IP addresses may not transmit data to the RTU as long as the primary IP continues to be operational. This kind of architecture allows the system to continue operation even if the Primary PC, LAN B, and the Primary CN2610 crash at the same time.

Primary PC, LAN B, and 1st CN2610 dead

CN2610 Series Appearance

LCM Display Panel

Reset Button

Push Buttons

LED Indicators
System Status, Serial Tx/Rx

Ethernet
RJ45 10/100 Mbps

RS-232 Console Port

Serial Ports
8-pin RJ45, RS-232, 50 to 921.6 Kbps

AC Power Input
100 to 240 VAC Input, 47 to 63 Hz

Connection Cable
8-pin RJ45 to DB9 Cable

19-inch Rackmount
The Rackmount Kit is a Standard Accessory

: Ordering Information

CN2610-8: 8-port RS-232 Dual LAN Async Server

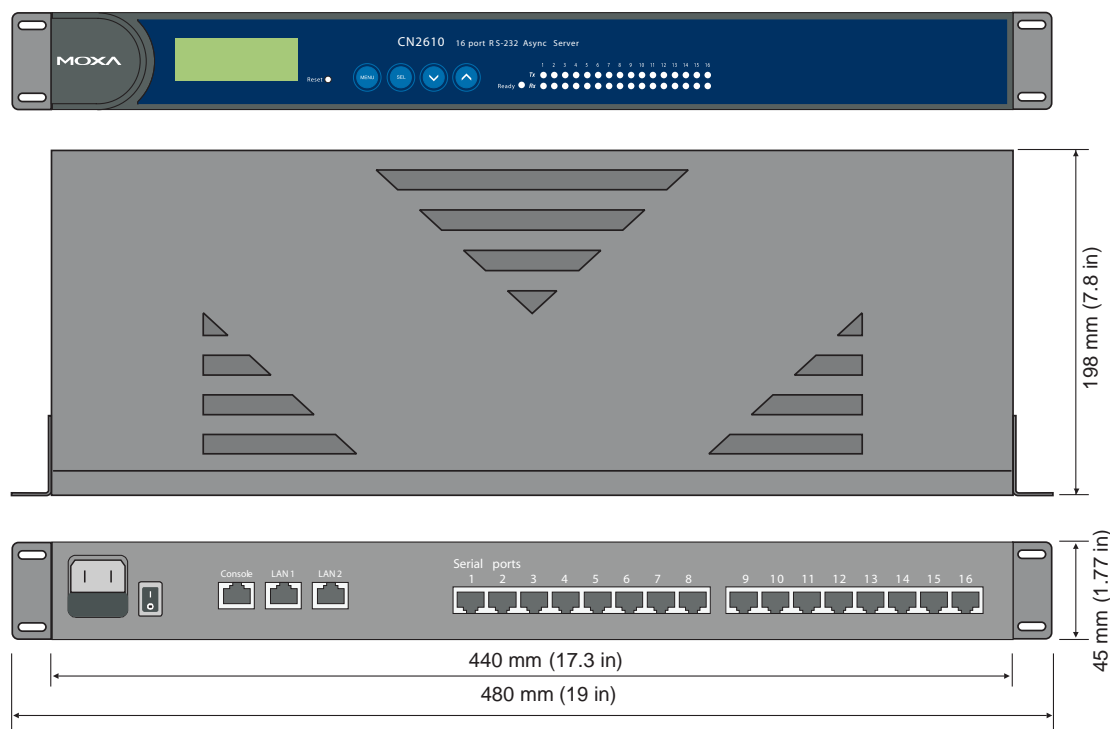**CN2610-8-48V:** 8-port RS-232 Dual LAN Async Server

Package Checklist
- 1 CN2610
- Quick Installation Guide
- Document and Software CD-ROM
- Power Cord x 1 (AC model only)
- CBL-RJ45F9-150 x 1
- CBL-RJ45M25-150 x 1

Optional Accessories

Power Cord: See page 12-10

Serial Cable & Serial Adapter: See page 12-4

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Dimensions (unit = mm)

4

Secure Terminal Servers/Terminal Servers

198 mm (7.8 in)

440 mm (17.3 in)

480 mm (19 in)

45 mm (1.77 in)

⋮ Connection Options

RJ45 to DB-type cables

DB9 (Male)
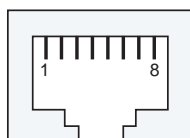
1   5

6   9

CBL-RJ45M9-150

8-pin RJ45 to DB9 (Male), 150 cm Cable

DB9 (Female)

5   1

9   6

CBL-RJ45F9-150

8-pin RJ45 to DB9 (Female), 150 cm Cable

DB25 (Male)

1   13

14   25

CBL-RJ45M25-150

8-pin RJ45 to DB25 (Male), 150 cm Cable

DB25 (Female)

13   1

25   14

CBL-RJ45F25-150

8-pin RJ45 to DB25 (Female),
150 cm Cable

⋮ Pin Assignment

RJ45 RS-232 port

1   8

Pin	Signals	Pin	Signals
1	DSR (in)	5	RxD (in)
2	RTS (out)	6	DCD (in)
3	GND	7	CTS (in)
4	TxD (out)	8	DTR (out)

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: Specifications

Hardware

CPU: 32-bit RISC

RAM: 4 MB

Flash ROM: 2 MB

I/O Controller: 16C550C compatible UART

LAN

Protection: Built-in 1.5 KV magnetic isolation

No. of Ports: 2

Speed: 10/100 Mbps

Serial

Interface: RS-232, 8-pin RJ45

No. of Ports: 16 (CN2610-16), 8 (CN2610-8)

Signals: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND

Console Port: 1 RS-232 console port (8-pin RJ45)

Serial Line Protection: 15 KV ESD for all signals

Power Line Protection: 1 KV Burst (EFT), EN61000-4-4

0.5 KV Surge, EN61000-4-5

Serial Communication Parameters

Parity: None, Even, Odd, Space, Mark

Data Bits: 5, 6, 7, 8

Stop Bit(s): 1, 1.5, 2

Flow Control: RTS/CTS, XON/XOFF

Speed: 50 bps to 921.6 Kbps

Software

Protocols: TCP/IP, UDP, ICMP, NetBUEI, DHCP, PPP, SLIP, CSLIP

Applications: Telnet, rlogin, rtelnet, DNS, LPD, RCP, WINS, Dial-on-Demand

Security: RADIUS, dialback, PAP, CHAP, local user / password

Management: SNMP MIB-II

IP routing: Static, RIP-I, RIP-II

Software Features

Utilities: Utility for Windows 95/98/ME/NT/2000/XP/2003

OS Driver Support: Windows 95/98/ME/NT/2000/XP/2003/XP x64/2003 x64 COM driver, Linux real TTY driver, SCO Unix, SCO OpenServer 5, UnixWare 7, UnixWare 2.1.x, SVR4.2

Fixed TTY Driver: SCO OpenServer 5, SCO Unixware 7.x, QNX

Real TTY Driver: Linux (kernel 2.2.x, 2.4.x, 2.6.x)

MOXA ASPP: Windows 9x/NT/ME/2K/XP/2003, Linux, UNIX

Socket: Standard BSD socket interface

Applications

Terminal Sessions: 8 sessions per port

Power Requirements

Power Input: 100 to 240V, 47 to 63 Hz

Power Consumption: 235 mA for 100V, 145 mA for 240V

Environment

Operating Temperature: 0 to 55°C (32 to 131°F), 5 to 95% RH

Storage Temperature: -20 to 70°C (-4 to 158°F), 5 to 95% RH

Gross Weight: CN2610-8: 3540g

CN2610-16: 3620g

Dimensions

440 x 198 x 45 mm (17.3 x 7.8 x 1.77 in)

Regulatory Approvals

EMC:

CE: EN55022 Class A / EN55024

FCC: FCC part 15 subpart B, Class A

Safety:

UL: UL60950

TÜV: EN60950

Warranty: 5 years

MTBF:

CN2610-8: 124859 hours

CN2610-16: 105915 hours